Report of...

Compliance Emission Testing

Performed for the...

Michigan Sugar Company
Croswell, Michigan

On the...

Pulp Dryer Exhaust

November 13, 2018

022.27

Network Environmental, Inc.
Grand Rapids, MI

I. INTRODUCTION

Network Environmental, Inc. was retained by the Michigan Sugar Company to perform compliance emission sampling on the exhaust of the Pulp Dryer located at their Croswell, Michigan facility. The purpose of the study was to meet the testing requirements of Michigan Department of Environmental Quality (MDEQ) – Air Quality Division Renewable Operating Permit MI-ROP-B2876-2013. The permit has established the following emission limits for this source:

Pollutant	Emission Limit
PM	0.10 Lbs/1000Lbs gas, Actual

The following reference test methods were employed to conduct the sampling:

- PM – U.S. EPA Method 17
- Exhaust Gas Parameters – U.S. EPA Methods 1 through 4

The sampling was performed on November 13, 2018 by Stephan K. Byrd and R. Scott Cargill of Network Environmental, Inc.. Assisting with the study was Mr. Steve Smock of the Michigan Sugar Company. Mr. Tom Gasloli and Mr. Ben Witkopp of the Michigan Department of Environmental Quality (MDEQ) – Air Quality Division were present to observe the sampling and source operation.

II. PRESENTATION OF RESULTS

II.1 TABLE 1
PM EMISSION RESULTS SUMMARY
PULP DRYER EXHAUST
MICHIGAN SUGAR COMPANY
CROSWELL, MICHIGAN
NOVEMBER 13, 2018

Sample	Date	Time	Air Flow Rate SCFM (1)	Concentration	Emission Rate
				Lbs/1000 Lbs, Actual(2)	Lbs/Hr (3)
1	11/13/18	8:18-9:23	48,805	0.064	12.71
2		9:40-10:43	47,047	0.061	11.66
3		11:01-12:04	47,679	0.077	14.84
Average			**47,843**	**0.068**	**13.07**

(1) SCFM = Standard Cubic Feet Per Minute (STP = 68 ° F & 29.92 in. Hg)
(2) Lbs/1000 Lbs, Dry = Pounds of Particulate Per Thousand Pounds of Exhaust Gas on an Actual Basis
(3) Lbs/Hr = Pounds of Particulate Per Hour

III. DISCUSSION OF RESULTS

The results of the emission sampling are summarized in Table 1 (Section II.1). The results are presented as follows:

III.1 PM Emission Results (Table 1)

Table 1 summarizes the PM emission results as follows:

- Sample
- Date
- Time
- Air Flow Rate (SCFM) – Standard Cubic Feet Per Minute (STP = 68 °F & 29.92 in. Hg)
- Particulate Concentration (Lbs/1000 Lbs, Actual) – Pounds of Particulate Per Thousand Pounds of Exhaust Gas On An Actual Basis
- Particulate Mass Emission Rate (Lbs/Hr) – Pounds of Particulate Per Hour

A more detailed breakdown for each sample can be found in Appendix A.

IV. SAMPLING AND ANALYTICAL PROTOCOL

IV.1 PM – The particulate sampling was conducted in accordance with U.S. EPA Method 17. Method 17 is an in-stack filtration method. The samples were collected isokinetically on filters. Three (3) samples were collected from the Pulp Dryer exhaust. Each sample was sixty (60) minutes in duration and had a minimum sample volume of thirty (30) dry standard cubic feet. The nozzle rinses and filters were analyzed gravimetrically for particulate in accordance with Method 17. All the quality assurance and quality control procedures listed in the methods were incorporated in the sampling and analysis. The particulate sampling train is shown in Figure 1.

IV.2 Exhaust Gas Parameters – The exhaust gas parameters (air flow rate, temperature, moisture and density) were determined in conjunction with the other sampling by employing U.S. EPA Methods 1 through 4. All the quality assurance and quality control procedures listed in the methods were incorporated in the sampling and analysis.

IV.3 Sampling Location – The sampling location for the Pulp Dryer exhaust was on the 72 inch I.D. exhaust stack at a location that met the maximum criteria of U.S. EPA Reference Method 1. The sampling points are as follows:

Point	Location (Inches)
1	3.17
2	10.51
3	21.31
4	50.69
5	61.49
6	68.83

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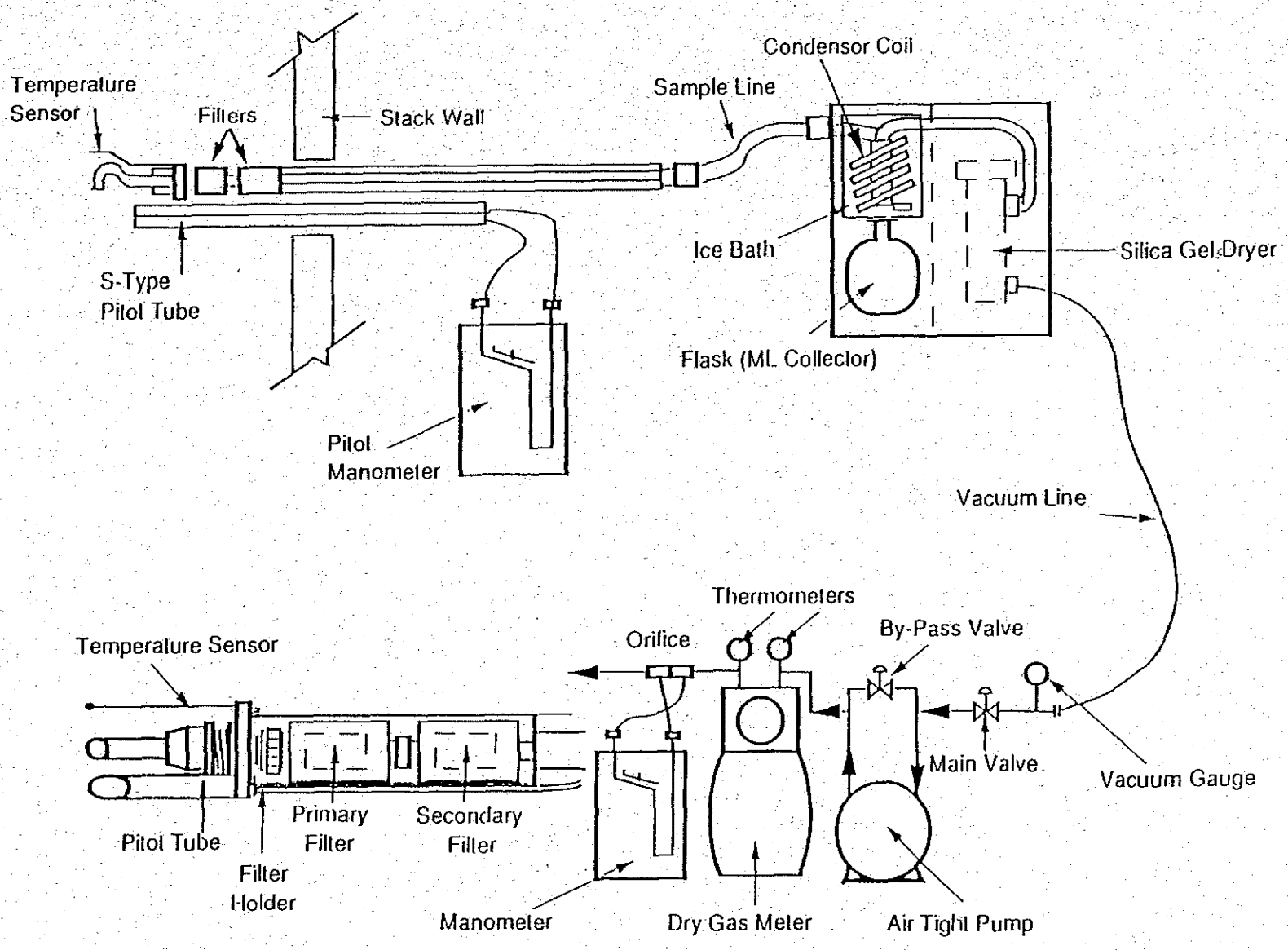

FIGURE 1

EPA METHOD 17

PARTICULATE SAMPLING TRAIN